We Claim:

1. A monolith reactor comprising:
a reactor housing,
a plurality of monoliths positioned within said reactor housing,
means for supporting said monoliths within said housing, and
means for maintaining said plurality of monoliths under virtually constant compression.

2. A monolith reactor as defined in claim 1 wherein said plurality of monoliths is positioned within said reactor housing along a longitudinal axis of said housing.

3. A monolith reactor as defined in claim 1 wherein longitudinal end portions of adjacent ones of said plurality of monoliths are in contact with each other.

4. A monolith reactor as defined in claim 1 wherein said plurality of monoliths are stacked one upon another within said rector housing.

5. A monolith reactor as defined in claim 4 wherein each of said plurality of stacked monoliths is in the form of an assembly of individual monoliths cemented together
about their longitudinal edges forming junctures between the monoliths.

6. A monolith reactor as defined in claim 5 wherein each assembly of monoliths is rotated up to about 90 degrees about a longitudinal axis of the reactor housing with respect to an adjacent assembly in the stack , or the honeycomb channels of the assembly are offset from the adjacent assembly, so as to provide a zigzag flow path through the reactor.

7. A monolith reactor as defined in claim 1 wherein said monoliths are in the form of ceramic honeycomb structures having channels extending there through parallel to a longitudinal axis of said reactor housing.

8. A monolith reactor as defined in claim 5 wherein said support means includes a support grating positioned at the bottom of said stack of monoliths, and having a grate pattern similar to the junctures between the cemented monoliths.

9. A monolith reactor as defined in claim 4 wherein each of said plurality of stacked monoliths has an opening formed therein aligned with its adjacent monolith, and said support means includes a rod having a bottom plate and suspended from an upper portion of said housing, and said rod extending through said aligned openings with the bottom plate engaging the lowermost monolith to support the stacked monoliths.

10. A monolith reactor as defined in claim 1 wherein said plurality of monoliths are stacked within said housing, said means for supporting said monoliths includes at least one support member at a bottom portion of said stack, and said constant compression means includes spring compression means urged against an upper portion of said stack of monoliths.

11. A monolith reactor as defined in claim 10 wherein said spring compression means includes adjustment means for adjusting the amount of pressure applied to the monoliths within said stack between said support member and the upper portion of said stack by said spring means.

12. A monolith reactor as defined in claim 11 including a grate member positioned over the uppermost monolith in said stack, said compression means including a spring member in contact with said grate member, and said adjustment means including threaded means adjacent said spring member for providing a predetermined pressure to said grate member and for maintaining said stack of monoliths under constant compression to prevent deleterious vibration, pressure and temperature effects on the monoliths.

13. A monolith reactor as defined in claim 10 wherein at least one rod means, threaded at an upper end portion, extends through said stack of monoliths and secured

at it upper end within said housing, said support member secured to the bottom of said rod means and supporting the bottom monolith in said stack, a pressure grid positioned over the uppermost monolith in said stack, said spring means overlying said threaded rod portion, and adjustment means on said rod means for maintaining said stack of monoliths under a constant predetermined compression to prevent deleterious vibration and compensate for different expansions between the stacked monoliths and reactor housing.

14. A monolith reactor as defined in claim 5 wherein cross-like spacers are provided between adjoining monolith assemblies in said stack, and a portion of said spacers being embedded within said adjoining assemblies.

15. A reactor for use in chemical processes comprising:

a reactor housing,

a plurality of honeycomb substrates positioned in a stacked relationship within said reactor housing along a longitudinal axis thereof, and

means for holding said stacked substrates together in a tight relationship for preventing deleterious vibration of the substrates and for compensating for different expansions between the stacked substrates and the reactor housing.

16. A reactor for use in chemical processes as defined in claim 15 wherein said means for holding said honeycomb structures tightly together includes spring compression means for maintaining a virtually constant predetermined compression on said stack of substrates.

17. A method of preventing deleterious vibration of substrates in a reactor and of compensating for different expansions between the substrates and the reactor body which comprises:

providing a reactor housing,

positioning a plurality of monolithic substrates within said housing in a stacked orientation along a longitudinal axis of the housing,

supporting such stacked substrates in a fixed relation at one end, and

applying a constant predetermined pressure to the stacked substrates at an opposite end to maintain the substrates in the stack under constant compression.

18. A method of preventing deleterious vibration of substrates in a reactor and of compensating for different expansions between the substrates and the reactor body as defined in claim 17 including the step of spring-loading the opposite end of said stack with a predetermined pressure to apply the desired constant compression to the stack of substrates.

19. A method of preventing deleterious vibration of substrates in a reactor and of compensating for different expansions between the substrates and the reactor body as defined in claim 18 including the step of adjusting the predetermined pressure by turning a threaded member to apply the desired compression to the loading spring.

20. A method of preventing deleterious vibration of substrates in a reactor and of compensating for different expansions between the substrates and the reactor body as defined in claim 17 including the steps of positioning a rod with a plate at its lower end through the stack of monoliths, and suspending the rod at an upper end of the reactor housing to support the stacked monoliths within the reactor.